Battle River Watershed Management Planning Process

Phase One

Terms of Reference

May 27, 2004

Alberta

GOVERNMENT OF ALBERTA

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Statement of Approval

The terms of reference for the Battle River Watershed Management Planning Process - Phase One outlines the objectives, process and structure that will be used in the planning process. It meets the criteria set out for Water Management Planning, as outlined in the *Framework for Water Management Planning* under the *Water Act* and is consistent with *Water for Life: Alberta's Strategy for Sustainability*.

These terms of reference for the Battle River Watershed Management Planning Process - Phase One are approved by the Alberta Environment *Water Act* Director responsible for water management in the Battle River basin, with the endorsement of the Steering Committee responsible for the Battle River Watershed Management Planning Process - Phase One.

Original Signed

Lawrence Williams, Regional Approvals Manager
Alberta Environment, Central Region

May 27, 2004

Date

Terms of Reference
Battle River Watershed Management Planning Process - Phase One

Table of Contents

1.0 Introduction 5
1.1 Planning Process Parameters 6
2.0 Objectives 6
3.0 Background Information 7
3.1 Planning Area and Watershed Characteristics 7
3.2 Current Conditions 8
3.2.1 Water Allocation and Use 8
3.2.2 Water Quality 8
3.3 Initial Summary of Current Issues 9
3.3.1 Transfers of Water Allocations 9
3.3.2 Impacts on Power Generation 9
3.3.3 Water Quality 9
3.3.4 Water Supply Security 10
3.3.5 Sustaining Biodiversity, Ecosystem Protection and Wildlife Habitat 10
3.4 Integrated Watershed Planning and Existing Local Watershed Groups 10
3.5 Policy and Legislative Context 11
3.5.1 The Water Act 11
3.5.2 Municipal Government Act 12
3.5.3 Public Lands Act 12
3.5.4 Environmental Protection and Enhancement Act 12
3.5.5 Fisheries Legislation 12
3.5.6 Wetland Policy 13
3.5.7 Existing Legal Commitments 13
3.5.8 Provincial Vision and Principles for Water Management Planning 13
3.5.9 Strategy for the Protection of the Aquatic Environment 14
3.5.10 Water for Life: Alberta's Strategy for Sustainability 14
3.5.11 The Water Allocation Transfer Mechanism 14
3.5.12 Aboriginal Policy Framework 15
3.6 Project Scope 15
North Saskatchewan Watershed Alliance - State of the Basin Report and Basin Planning 15
Local Watershed Groups 15
Driedmeat Lake and Coal Lake Projects 15
4.0 Phase One Planning Process, Products and Structure 16
4.1 Stage 1 - Baseline Data Requirements 16
4.1.1 Natural Flows 16
4.1.2 Infrastructure 16
4.1.3 Licences and Registrations (water demand data) 16
4.1.4 Water Model of Battle River 16
4.1.5 Apportionment Information 17
4.1.6 Aquatic Environment Data 17
4.1.7 Historical Alternative Water Supply Studies 17
4.1.8 Projected Water Demand Study 17
4.1.9 Recreation Use Data 18
4.1.10 Climate Change 18
4.1.11 Groundwater 18
4.2 Stage 2 - Stakeholder Recommendations 18
4.3 A Foundation for Sustainable Watershed Management 18
4.4 Public Consultation and Stakeholder Participation Requirements 19
4.4.1 Public Consultation Objectives 19
4.4.2 Key Stakeholder Sectors and Groups 19
4.5 Roles, Responsibilities and Accountability of Participants 19

4.5.1 Steering Committee 19
4.5.2 Working Group 20
4.5.3 Stakeholder Advisory Group 21
4.5.4 Aboriginal Consultation 21
4.5.5 Project Coordinator 21
5.0 Process Timeline 22
GLOSSARY 23
Acronyms 23
Terms 23

1.0 Introduction

The Battle River is a key watershed in east-central Alberta, covering an area of 25,000 square kilometers in the province. The river's water supply is derived entirely from local surface runoff (rain and snow melt) and groundwater flows. It is therefore without the benefit of prolific mountain/foothill snow packs and glacial melt that contribute to many river watersheds in Alberta.

The Battle River watershed falls entirely within the Parkland Natural Ecoregion, the richest ecoregion in Alberta for biodiversity. The Battle River provides the ecoregion with a rich variation in ecosystems associated with its aquatic environment, associated living organisms and the ecological complexes of which they are part.

Increasing pressure on the Battle River's water supply is presenting a challenge for residents of the watershed and for Alberta Environment, the provincial department responsible for the management and allocation of water in Alberta. As demand for water meets or exceeds the river's natural supply, social, ecological and economic limitations and issues become apparent. A key tool to address this resource management challenge is a Water Management Plan.

In general, a water management plan should "provide broad guidance for water management, set out clear and strategic directions regarding how water should be managed or result in specific actions" (p. 13, *Framework for Water Management Planning*). Water Management Plans can take various forms and they are enabled and defined by the *Water Act*, and the provincial *Framework for Water Management Planning*.

The Alberta Government has recently adopted a new approach to water management through its *Water for Life: Alberta's Strategy for Sustainability*. The *Water for Life Strategy* outlines key directions and priorities to guide future water management in Alberta. The Battle River planning process will draw on the strategy and contribute to the advancement of a new water management model.

As the ministry charged with water management, Alberta Environment will facilitate the first phase of the Battle River watershed planning process through the development of a water management plan.

Collaboration with stakeholders and the general public will be key during the process. Given that there is not yet an established watershed group representing the entire Battle River watershed, Alberta Environment will assemble a stakeholder group with a view to it becoming a Watershed Planning and Advisory Council (WPAC) as identified in the *Water for Life Strategy*, for future phases of planning.

Phase one will be based on a comprehensive assessment of current conditions and commitments (licensed allocations) in the main stem and major tributaries of the Battle River as well as the associated riparian environment. The resulting draft plan and recommendations will be submitted to the Regional Director appointed under the *Water Act*. Responsibility for final approval of the water management plan rests with the Minister of Environment (and possibly Cabinet if an "Approved" plan).

This document is the Terms of Reference for Phase One of the *Battle River Watershed Management Planning Process* and outlines the key elements required for the process,

including background information, objectives, participants, and timelines. Final approval of the Terms of Reference is the responsibility of the Director under the *Water Act*.

1.1 Planning Process Parameters

Phase one will focus on recommendations for water management (supply and instream needs) of the main stem of the Battle River and its main, named tributaries. It will deal with surface water for allocation purposes only. This process will therefore focus on water in the river, and the river's associated riparian area, as it relates to instream needs and licensing of water uses (allocation). All licences in good standing will be respected in this process and factored as current demands on the river.

Water management recommendations will be accomplished through recommendations for Water Conservation Objectives (WCO's) as defined in The *Water Act*. Water Conservation Objectives strive to balance water consumption and (aquatic) environmental protection. Ecological requirements, economic values and social values will be considered in determining the recommendations.

> From the *Water Act*: *"water conservation objective" means the amount and quality of water established by the Director under Part 2, based on information available to the Director, to be necessary for the*
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> *i) protection of a natural water body or its aquatic environment, or any part of them,*
>
> *ii) protection of tourism, recreational, transportation or waste assimilation uses of water, or*
>
> *iii) management of fish or wildlife*
>
> *and may include water necessary for the rate of flow of water or water level requirements*

Phase one of the watershed management planning process will also address water quality issues as they relate to human and aquatic environment health. It does not specifically address drinking water issues.

This process will also recommend a general set of water management guidelines, priorities and strategies that will provide direction for phase two and further planning activity. In general, Phase One provides the base required to develop a more comprehensive watershed management plan (Phase Two).

2.0 Objectives

Resource managers follow policies, guidelines and requirements pertaining to the appropriate legislation when making decisions that impact natural resources in the province of Alberta. The Water Management Plan is not intended to replace these requirements. However, the recommendations made during this process will supplement the legislative requirements, where it is appropriate to do so. For example, the *Water Act* outlines requirements that must be adhered to before an approval, preliminary certificate or licence is approved by Alberta Environment, but does not specify all matters to be considered in making the decisions. This

planning process will provide recommendations for the supplemental matters to be considered.

The main objectives for Phase One of the plan are to:

1. Develop recommendations for resource managers to consider during decision making processes:
   - that are based on public input and current, relevant knowledge of the watershed
   - that include matters and factors for issuing an approval, preliminary certificate or licence
   - for the implementation of the water allocation transfer provision under the *Water Act,* if this has not been completed under provincial legislation
   - that include matters and factors to be considered by the Director when reviewing transfer applications
   - for water management operations
   - for land management practices on public land
   - that will include performance monitoring suggestions to measure progress and outcomes relative to the stated objectives of the plan

2. Develop recommendations for resource managers to consider that maintain, or where applicable, restore or enhance, the biological diversity (biodiversity) in the watershed that the Battle River aquatic environment contributes to:
   - through a Strategy for the Protection of the Aquatic Environment
   - through Water Conservation Objectives that are based on instream flow needs and economic development needs

3. Provide a foundation for Phase Two of watershed planning and management activities by:
   - identifying key data gaps that need to be filled to improve water management in the future and to identify costs, benefits and sources for gathering this information (data gaps may pertain to information on aquatic health, water use, water quality, natural flows, etc.)
   - providing a comprehensive account of the watershed's major issues, resource objectives and priorities and set the stage for new and innovative partnerships for sustainability (i.e. the final plan will contain significant information that will supplement North Saskatchewan Watershed Alliance's State of the Watershed report)
   - by engaging the phase one stakeholder advisory group in significant capacity building activities in preparation for their establishment as a Watershed Planning and Advisory Council to lead phase two

3.0 Background Information

3.1 Planning Area and Watershed Characteristics

Geographically, the watershed covers an area of approximately 30,000 square km (17,667 square miles), with 25, 000 square km (13,857 square miles) of that being in Alberta. There is little variation in elevation throughout the watershed, with the river's average gradient being less than 0.4 m/km.

The Battle River Watershed is located within the Parkland Natural Region in east-central Alberta. This area is an extremely rich and diverse landscape, characterized by productive soils and a climatic regime suitable for agricultural production. Although the majority of the landscape has been modified by use by man, the natural lands, which remain, in combination with abundant wetlands and riparian areas, produce an abundance of plant and animal life (biodiversity). In addition, these uncultivated lands and water systems support all the economic, ecological, aesthetic and recreational values associated with natural lands.

The river's water supply is derived entirely from local surface runoff (rain and snow melt) and groundwater flows, without the benefit of prolific mountain/foothill snowpacks and glacial melt that contribute to many river basins in Alberta.

The headwaters of the Battle River are near Winfield, at Battle Lake (southwest of Pigeon Lake). The river flows for approximately 800 km before reaching the Saskatchewan border. The river then continues for another 300 km before joining the North Saskatchewan River at the City of North Battleford. Overall, the Battle River is a minor contributor to the North Saskatchewan River, producing approximately 3.5% of that river's total flow each year. The Battle River's mean annual discharge of 296,000 cubic decameters (dam^3), or 237,000 acre feet accounts for only 0.23% of the province's total mean annual discharge from all rivers.

3.2 Current Conditions

Defining detailed "current conditions" in the Battle River watershed requires a thorough assessment of the status of water allocations, water supply and the health of the aquatic environment (see details in section 4.1). This information will be gathered to provide a basis for recommending management options and strategies for the watershed plan.

Collection and collation of this baseline information comprises the first step in the planning process and must precede the development of recommendations to complete phase one. A broad overview of current conditions in the watershed is provided in the following summary.

3.2.1 Water Allocation and Use

The Battle River is heavily allocated. Consumptive use is largely for municipal, industrial and agricultural applications, although most municipalities in the watershed use groundwater supplies. Camrose and Wetaskiwin are the two largest urban centres using surface water. Modifications to raise the level of Driedmeat Lake (which supplies the City of Camrose) are currently being pursued to increase the available storage and supply.

ATCO Electric holds the largest licence in the watershed. Most of the water used in this licence is returned to the river, after being used for cooling purposes at the company's Forestburg coal fired electrical generating plant. ATCO's licence includes minimum passing flow requirements that must be met.

3.2.2 Water Quality

The maintenance of water quality is an ongoing challenge given the river's naturally low flows, natural conditions of the watershed, and the cumulative impact of human influences. Human influences include point and non-point pollution

sources from municipal, industrial, and agricultural activities. Water quality is a concern for the health of the aquatic environment, human health, agricultural applications, and aesthetic considerations. Phase One of the watershed management plan will address water quality as it relates to human and aquatic environment health. Other relationships will be addressed in Phase Two.

3.3 Initial Summary of Current Issues

Water demands from urban, rural, and industrial expansion exceed the Battle River's supply capacity. As demand continues to increase, water management must become correspondingly more strategic to ensure that supply and demand management is optimal, and that the health and integrity of the aquatic environment is protected.

The following are an initial statement of issues in the watershed. The issues are not listed in any priority sequence.

A thorough listing of issues will be conducted throughout the planning process, and be listed in the final draft plan. Not all issues will be necessarily addressed in phase one of the watershed planning process.

3.3.1 Transfers of Water Allocations

Included in the *Water Act* is a provision for the transfer of existing licensed water allocations from an existing licence holder to another existing or new licence holder within the same basin. This mechanism is particularly important in highly allocated watersheds where new allocations are either unavailable or of high risk (low priority that may frequently be denied water). The provincial water strategy recommends that the transfer mechanism be enabled provincially. If this has not occurred during the time this plan is developed, transfers of existing licences may be recommended in Phase One.

Transfers must be approved by the Alberta Environment Director appointed under the *Water Act*. In reviewing transfer applications, the Director may consider the "matters and factors" that are developed during this process (objective #5, section 2.0).

3.3.2 Impacts on Power Generation

ATCO Electric operates a thermal power generating station on Forestburg Reservoir on the mainstem of the Battle River. Recent drought conditions have exacerbated low flow conditions on the Battle River, causing impacts upon the operation of the ATCO power generating station. ATCO's licence will be respected in this planning process and the allocated amount of water will be included in all modeling scenarios.

3.3.3 Water Quality

Instream water quality will focus primarily on aquatic health needs, which largely encompass human health issues not associated with actual consumption. Human health matters related to consumption of surface water are typically addressed through water treatment processes and technologies.

Agricultural, municipal and industrial activities have all impacted water quality in the Battle River. This planning process will recommend strategies for the protection and management of water quality as it relates to the aquatic environment. Other strategies that involve land use planning and management is beyond the sole jurisdiction of Alberta Environment. These more complex multi-jurisdictional issues will be appropriate undertakings for phase two, when the WPAC will be in place to address watershed issues in a fully integrated manner.

3.3.4 Water Supply Security

Area municipalities and local residents have expressed concerns about the long-term impact of lower than average precipitation, resulting in diminished regional water supplies and the subsequent broad implications for agricultural activities, municipal consumption, industrial development and recreational development.

Exploration of current and future water needs, including those for economic growth, is required prior to supply management and augmentation examinations being discussed. This information will be collected and therefore help determine the strategy to balance water consumption and environmental protection. Assessment of potential water supply options including pipeline options will be conducted in the Projected Water Demand study (see section 4.1.8).

Diversion proposals affecting the North Saskatchewan River basin, or other sub-basins, must be reviewed in the context of the water management needs and objectives of the impacted and contributing basins. Any such review would follow this planning project and be guided by alternative supply recommendations made during this process.

3.3.5 Sustaining Biodiversity, Ecosystem Protection and Wildlife Habitat

The Battle River valley provides critical habitat for numerous wildlife species and populations including waterfowl, songbirds, ungulates and various aquatic species. The maintenance of sufficient flows and water quality is important for the protection of this ecosystem and sustaining biodiversity in the watershed.

Alberta's Commitment to Sustainable Resource and Environmental Management, the *Water Act,* and *Framework for Water Management Planning* all require that water management and planning utilize an integrated approach to incorporate all aspects of the ecosystem. The *Water Act* also recognizes that the protection of the aquatic environment is essential to sustainable water management.

Pressures on water supply and quality have impacted the health of this ecosystem and specific management strategies will be required to ensure that critical ecosystem functions and services are maintained, restored or enhanced.

The Battle River's habitat and landscape attributes also contribute to the quality of life of local residents by providing several recreation opportunities in the region.

3.4 Integrated Watershed Planning and Existing Local Watershed Groups

While land and water are closely linked through the hydrological cycle, these resources have not historically been managed or administered in a fully integrated manner. Managing

water on the basis of individual watersheds requires a high level of cooperation between different agencies and jurisdictions. This new and more integrated watershed approach, in the form of shared governance through partnerships, is a cornerstone of *Water for Life*.

Local watershed groups already active in the Battle watershed have taken steps in this direction and provide a foundation for further progress in this watershed-wide planning initiative. These local groups will continue to function long after the planning process is complete and they will be key to achieving long-term sustainable watershed management.

A number of local watershed protection groups/initiatives are currently active in the Battle River watershed. These local initiatives can take many forms but are often characterized by private landowners working in partnership with local municipalities and agencies such as Agriculture and Agri-Food Canada, Prairie Farm Rehabilitation Administration (PFRA); Ducks Unlimited Canada, Alberta Agriculture, Food and Rural Development (AAFRD), Department of Fisheries and Oceans (DFO); Alberta Conservation Association (ACA); Cows and Fish, Alberta Riparian Habitat Management Program; and the Community Riparian Program under the Agriculture and Food Council.

3.5 Policy and Legislative Context

This plan will reflect current legislation, policy, principles and objectives of *Alberta's Commitment to Sustainable Resource and Environmental Management*, the *Water Act*, *Framework for Water Management Planning* and *Water For Life: Alberta's Strategy for Sustainability*.

In Alberta, the *Water Act* and the *Framework for Water Management Planning* provide the legislative and policy context for the design and development of watershed management plans. This Terms of Reference adheres to the legislative and policy requirements as outlined in the above documents. It also includes optional water planning elements as deemed appropriate for the Battle River.

3.5.1 The *Water Act*

In 1999, the Alberta Government replaced the *Water Resources Act* with the *Water Act*. The objective was to bring the province's water management legislation and policy up to date so it could more effectively address today's water management demands and challenges. The *Water Act* focuses on managing and protecting Alberta's water resources and streamlining administrative processes.

The following *Water Act* highlights are particularly relevant to the Battle River planning process:

- Existing licences that are in good standing are protected (and will be respected in this process)
- A limited amount of water can be used on an owners land base without licence, if the owner had legal ownership prior to 1999. The importance of "household uses" of water are recognized and provided with a statutory right that has priority over all other uses

- The development of the *Framework for Water Management Planning* was a *Water Act* requirement designed to provide direction for the development of water management plans and ensure the sustainable management of Alberta's water resources
- The *Water Act* requires that a strategy for protection of the aquatic environment be part of the provincial water management planning framework
- Through the water allocation transfer mechanism, the Act allows for flexible water management – particularly in areas where all reliable water available is already allocated
- The *Water Act* requires that Albertans have the opportunity to provide advice on water management

3.5.2 Municipal Government Act

Landowners and managers, as determined in the provincial *Municipal Government Act*, administer the majority of land use practices within the Battle River watershed. Only small parcels of land are administered as Public Lands, Protected Areas or Indian Reserves.

Under this Act, Municipalities may plan for the development and use of land, and maintain and improve the quality of the physical environment. They therefore have the responsibility of determining land use zoning, which can impact water quality.

3.5.3 Public Lands Act

The province of Alberta owns the bed and shore of all permanent and naturally occurring water bodies. Bed is defined as the land on which the water sits and the shore is defined as the part of the bed that is exposed when water levels are below their normal fullest level. Use or disturbance of the bed and shore requires prior authorization under this legislation.

3.5.4 Environmental Protection and Enhancement Act

This is provincial legislation that takes an integrated approach to the protection of Alberta's air, land and water. One of the Act's cornerstones is the guarantee of public participation in decisions affecting the environment. This public involvement includes increased access to information, participation in the Environmental Assessment and Approval Processes and the right, when directly affected, to appeal certain decisions.

3.5.5 Fisheries Legislation

Alberta's fisheries are managed through the *Alberta Fisheries Act*, while fish habitat in Alberta is managed and protected through the federal *Fisheries Act* (Canada). Through these two pieces of legislation, the *Fish Conservation Strategy* guides the overall management and protection of the fisheries resource in Alberta. Its guiding principles include: no net loss of the productive capacity of fish habitat and the biological diversity of fish fauna is to be maintained.

3.5.6 Wetland Policy

In Alberta, wetland management decisions have been guided by the *Wetland Management in the Settled Area of Alberta - An Interim Policy (1993)*. This policy calls for the conservation of slough/marsh wetlands in a natural state, to mitigate degradation or loss of slough/marsh wetland benefits as near to the site of disturbance as possible and to enhance, restore or create slough/marsh wetlands in areas where wetlands have been depleted or degraded. Alberta's *Water Act* (1999) regulates activities that might interfere with a wetland such as draining or filling. Alberta is presently developing a new wetland policy and supporting action plan to achieve sustainable wetlands in the province, based on a no net loss strategy. The use of inventories and mitigation will lead to significant progress toward achieving the principle of "no net loss". Currently, *Water for Life* suggests that wetland objectives be set as part of the watershed planning process. Wetland Objectives will be addressed in Phase Two of this planning process.

3.5.7 Existing Legal Commitments

i) *Water Act* (Current Licences and Registrations)
The Battle River Watershed planning process will respect the rights of existing licences and licence-holders, consistent with the *Water Act*.

ii) The Apportionment Agreement
The planning process will respect the *Master Agreement on Apportionment* (1969), including Schedule E, which deals with water quality requirements. The apportionment agreement entitles Saskatchewan to approximately 50% of the natural flow of the Battle River.

iii) The *North Red Deer Water Authorization Act*
On December 4, 2002, the *North Red Deer Water Authorization Act* was passed in the Alberta Legislature. This Act allows a diversion of treated water from the Red Deer River, using the City of Red Deer water treatment plant, to the towns of Blackfalds, Ponoka, Lacombe and First Nations communities. When approved and completed, this project will result in treated wastewater "return" flows being released into the Battle River rather than back into the Red Deer River.

iv) *Public Lands Act*
This planning process will respect the *Public Lands Act* as it relates to the bed and shores of waterbodies, including wetlands.

3.5.8 Provincial Vision and Principles for Water Management Planning

The Framework for Water Management Planning outlines a vision and set of principles to guide water planning. The vision and principles were developed through consultation with Albertans and adopted by the Government of Alberta when creating the *Water Act*. This planning process will adhere to the vision and principles as outlined in the framework (pp. 7 & 8).

3.5.9 Strategy for the Protection of the Aquatic Environment

The planning process will include the development of a Strategy for the Protection of the Aquatic Environment, as defined in the *Water Act* and *Planning Framework*. The strategy will include determining flows required to remain in the river for maintaining aquatic health. Future water management options and decisions will have inevitable impacts on the Battle River's ecology. Requirements for maintaining aquatic health will, therefore, be considered along with social and economic needs.

Riparian ecosystems are considered part of the aquatic environment and issues related to riparian health will be reviewed in this planning process. Recommendations may include water and land management strategies required to preserve or enhance riparian health.

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> *(i) protection of a natural water body or its aquatic environment, or any part of them,*
>
> *(ii) protection of tourism, recreational, transportation or waste assimilation uses of water, or*
>
> *(iii) management of fish or wildlife,*
>
> and may include water necessary for the rate of flow of water or water level requirements

3.5.10 Water for Life: Alberta's Strategy for Sustainability

Water for Life: Alberta's Strategy for Sustainability was finalized in November 2003 and promotes a watershed approach for water management, planning and decision-making. It was developed on the basis of extensive provincial consultation and outlines key directions, strategies and actions to manage Alberta's water resources into the future.

Two key principles are:

- Alberta's water resources must be managed within the capacity of individual watersheds
- Citizens, communities, industry and government must share responsibility for water management in Alberta and work together to improve conditions in their local watershed.

The Battle River planning process will be adaptive and flexible to ensure that it maintains congruence with the *Water for Life Strategy* as it is implemented.

3.5.11 The Water Allocation Transfer Mechanism

Water for Life proposes that the *Water Act* provision for the transfer of water allocations between users (Section 82) be approved for provincial implementation. The transfer mechanism is an important tool for enabling a market-based means of re-allocating licensed water within a basin.

To meet the requirements of the *Framework for Water Management Planning*, an "Approved Water Management Plan must include...the matters or factors that must be considered in deciding whether...to approve a transfer of an allocation of

water under a licence in the area of the province to which the Approved Water Management Plan applies."

3.5.12 Aboriginal Policy Framework

The province's *Aboriginal Policy Framework* will be consulted as a guideline for Aboriginal consultation and involvement during this process.

3.6 Project Scope

The Battle River Watershed Management planning process (Phase One) will address the objectives in section 2.0, the issues outlined in section 3.3, and may include additional issues identified during the planning process. The scope of the planning process is also influenced by other activities occurring in the watershed. Some key activities to be considered in this process are:

North Saskatchewan Watershed Alliance - State of the Basin Report and Basin Planning

The North Saskatchewan Watershed Alliance (NSWA) is currently completing a state of the basin report and preparing to undertake a watershed planning exercise for the North Saskatchewan River basin. The Battle River and NSWA planning processes will proceed independently but with extensive consultation between the two to ensure consistency and congruence between the watersheds.

Once this initial planning project is completed, the Battle River Watershed Planning and Advisory Council and the NSWA will have the opportunity to redefine the nature and terms of their long-range working relationship under *Water for Life*.

Local Watershed Groups

A number of local watershed stewardship groups are already active in the Battle River watershed and these will also be involved in the planning process. The participation of these groups will be particularly important when considering land use management strategies relating to water quality and quantity issues.

Driedmeat Lake and Coal Lake Projects

The City of Camrose draws its municipal water supply from Driedmeat Lake. Lower than normal lake levels in the past 5 years have threatened the security of this supply. Alberta Environment and Alberta Transportation are undertaking an assessment to raise the level of the weir to increase the security of the supply. While the impact on flow management will need to be incorporated into water modeling for the basin, the project itself is outside the scope of this planning exercise.

Coal Lake, although an off-stream storage site, also impacts flow in the system by impounding a large volume of spring runoff. In addition to being the municipal supply for the City of Wetaskiwin, the lake provides water for industrial diversions to the Hay Lakes injection field, other small producers, and serves as major regional recreation site. AENV is currently looking into rehabilitating the existing structure to improve winter flow capability. The Coal Lake project is also outside the scope of this planning exercise.

4.0 Phase One Planning Process, Products and Structure

Phase One of the Battle watershed planning process contains two distinct stages. Stage 1 will incorporate the gathering of data and organization of the planning process structure and its key technical and stakeholder participants. Stage 2 will encompass the implementation of the planning process in which issues are identified and recommendations developed through a consultative process.

4.1 Stage 1 - Baseline Data Requirements

The *Framework for Water Management Planning* outlines the scope of information that should be considered for incorporation in a water management planning project. This section outlines the technical information deemed necessary to conduct phase one of the Battle River watershed planning process. A more complete breakdown of the information and data requirements, who will collect it and by when, will be documented in a detailed work plan that will be developed by the Working Group (defined in 4.5.2 Working Group, page 16), separate from this Terms of Reference.

During the planning process, information shortfalls, or "data gaps", will be identified. Beyond identifying data gaps, the plan may also define: (a) appropriate methods for collecting the data, (b) the value and purpose of the data, and (c) the costs and funding sources for data collection.

Data requirements for completing phase one are summarized under the following themes:

4.1.1 Natural Flows

Natural flow data is the foundation of water planning and management, particularly as it pertains to water quantity. Natural flows are calculated based on a "project-depletion method", where recorded flows are adjusted by the volume of withdrawals/allocations from the river and takes into account net changes due to precipitation and evaporation. Recorded flow information is that collected from all gauging stations in the basin.

4.1.2 Infrastructure

An inventory and description of water control structures and their respective operations is required to understand how water is currently managed and what the current limitations of the water operations system are.

4.1.3 Licences and Registrations (water demand data)

An inventory of all water licences and registrations in the basin is required to create a clear picture of the current status of water allocations, demand and use.

4.1.4 Water Model of Battle River

The Water Resource Management Model (WRMM) is a computer modeling tool used to simulate different flow regimes in a river system. AENV will prepare a WRMM specific to the Battle River mainstem for the purpose of examining current conditions and running various scenarios to explore future management options.

Licensed allocations will be factored into this model to reflect demands/ withdrawls from natural flow.

4.1.5 Apportionment Information

Apportionment information is required to assess the implications of meeting the terms of the agreement with Saskatchewan.

4.1.6 Aquatic Environment Data

A Strategy for the Protection of the Aquatic Environment will be included as part of the Battle River Watershed planning process. This will require data on Instream Needs (IN), which are defined as water requirements (quality and quantity) for maintaining the health of the aquatic environment. According to the *Water Act*, protection of the aquatic environment includes the riparian ecosystem.

i) Water Quality Data

Alberta Environment's Water Sciences Branch completed a comprehensive water quality study of the Battle River in 1999. The report and AENV staff will provide the water quality information required to complete the plan. Water quality issues and impacts from all sources will be considered.

ii) Riparian Environment Data

The riparian environment is considered a component of the aquatic environment as defined in the *Water Act* and framework. Data on health of the riparian ecosystem is critical and such data is available from a variety of agencies that have been conducting riparian assessments in the Battle River watershed.

iii) Fisheries Data

Significant fisheries data was gathered for the Battle River in the 1970s and for one specific reach in the late 1990s. While no Instream Flows Needs field studies have been conducted for fish on the Battle River, there is a draft Instream Needs report available based on the Tennant-Tessman method.

iv) Channel Maintenance

Flows for channel maintenance are required to maintain a healthy river channel for the aquatic environment. Channel maintenance data has not been determined for the Battle River, although this can be accomplished through computer modeling. Channel maintenance will be a component of Instream Needs assessment.

4.1.7 Historical Alternative Water Supply Studies

Any historical reference material pertaining to investigations into alternative water supplies for the Battle River basin will be reviewed during this process.

4.1.8 Projected Water Demand Study

A study will be conducted to provide an analysis of current and future water demands and consumption by major category of use for the watershed.

Assessment of potential water supply options, including pipeline options, will also be conducted in this study.

4.1.9 Recreation Use Data

Recreational use data will be collected from Alberta Community Development, Alberta Sustainable Resource Development and local municipalities to ensure that information on main-stem recreational use is available for consideration during the planning process. Current regional tourism plans, or other studies, will also be used to glean relevant recreation data for the watershed.

4.1.10 Climate Change

There is insufficient data available at this time to permit defensible and reliable modeling of climate change scenarios. It may become necessary to revisit this Water Management Plan in the future, once better climate change predictions and data are available.

4.1.11 Groundwater

There is recognition that the groundwater resource and its connection with river flows are not well understood in Alberta. Available information about groundwater in the Battle River watershed will be collected and serve as a basis for determination for future studies.

4.2 Stage 2 - Stakeholder Recommendations

The principal product to be generated through this stage of the planning process is a set of stakeholder recommendations for the completion of phase one of the Battle River Watershed Management Planning process. A Stakeholder Advisory Group will be initiated early in the planning process and guide the development of these recommendations. These recommendations will be made after compilation and consideration of the data in Stage 1.

The stakeholders' recommendations will outline preferred management priorities, guidelines and objectives as well as recommendations for water issues identified in the process. Final recommendations of the Stakeholder Advisory Group will be submitted to the Steering Committee for consideration in the development of a draft Battle River Watershed Management Plan, Phase One.

4.3 A Foundation for Sustainable Watershed Management

Additional outcomes from the planning process include establishing a collaborative foundation to support ongoing community-based watershed management as envisioned in the provincial water strategy. Watershed Planning and Advisory Councils (WPAC) will provide one mechanism for involving communities and stakeholders in the ongoing stewardship of their respective watersheds. This approach is grounded in the principle of shared governance through a network of partnerships and WPACs will be a cornerstone of this model.

The Stakeholder Advisory Group assembled for phase one will reflect the multi-sector representation required for WPACs. Beyond fulfilling the immediate water management objectives of the watershed plan, phase one will set the stage for long-term integrated

sustainable watershed management. The information, issues and priorities documented in phase one will provide a foundation for the Battle River WPAC to assume its role of facilitating future watershed planning activities.

4.4 Public Consultation and Stakeholder Participation Requirements

In accordance with the *Water Act*, *Framework for Water Management Planning* and *Water for Life*, stakeholder and public consultation is an essential part of any water planning process. Stakeholder consultation is initiated in the Terms of Reference stage and continues through to the submission of a recommended draft plan to the Director. Broad public consultation will focus on a review of the draft Phase One Watershed Management Plan.

The Stakeholder Advisory Group will be initiated early in the planning process.

A detailed Public Consultation and Communications Plan will be developed to guide implementation of the consultation process and goals. These details will be developed in consultation with stakeholders to ensure the process suits everyone's needs to the greatest degree possible.

4.4.1 Public Consultation Objectives

The two basic objectives for public consultation are:

(1) an opportunity for citizens to understand the issues and resource management challenges being faced, and

(2) an opportunity to help define the full spectrum of issues and provide input regarding preferred solutions and options for water management in the watershed.

4.4.2 Key Stakeholder Sectors and Groups

The following sectors have been identified in the Battle River watershed. Stakeholder representation on the advisory group will be organized around knowledge of these sector categories:

Agriculture (grazing/livestock/cropping)
Energy (oil and gas, coal / power generation)
Industry (non-energy)
Recreation/Tourism
Environment/Habitat
First Nations
Municipal (rural and urban)

4.5 Roles, Responsibilities and Accountability of Participants

Phase One of the Battle River Watershed Management Planning process will be led and facilitated by Alberta Environment, through Regional Services (Central Region) staff.

4.5.1 Steering Committee

An interdepartmental Steering Committee will provide direction throughout the planning process and be actively involved in reviewing Terms of Reference,

Working Group and Stakeholder Advisory Group membership as well as draft plans. This committee will consist of senior government managers from:

- Alberta Environment Approvals
- Alberta Environment Water Operations
- Alberta Sustainable Resource Development Fisheries
- Alberta Sustainable Resource Development Wildlife
- Alberta Sustainable Resource Development Public Lands
- Alberta Agriculture, Food and Rural Development
- Alberta Economic Development
- Fisheries and Oceans Canada

Each member will be responsible for representing their department/agency and ensuring that the mandates for these departments are considered in the planning process.

The Steering Committee will receive the recommendations of the Stakeholder Advisory Group, ensure their consideration, and be responsible for advancing the recommended final draft of the plan for final approval. Alberta Environment's Regional Services Environmental Team Manager will chair this Committee.

4.5.2 Working Group

The Working Group will be responsible for:

- Public consultation
- Research and collection of data required for the planning process
- Developing education, modeling and information products for Stakeholder Advisory Group and public
- Assisting in the development of the draft management plan

The Working Group will consist of a core planning team, and be composed of:

- Project Coordinator (AENV) - Chair
- Water Quality Specialist (AENV)
- Water Modeling Planner (AENV)
- Education And Awareness Specialist (AENV)
- Stakeholder Advisory Group member

In addition, technical support will be sought from other working group members:

- Riparian health, land owner liaison (Cows and Fish)
- Watershed and riparian management (PFRA)
- Fisheries management (ASRD, DFO)
- Aquatic and riparian habitat protection (ACA)
- North Saskatchewan Watershed Alliance
- River engineering (AENV)
- Hydrology (AENV)
- Water operations/infrastructure (AENV)
- Water modeling (AENV/consultant)
- Licensing (AENV)
- Wetlands (Ducks Unlimited)
- Watershed stewardship groups (AENV)
- Recreation uses (AB Community Development)
- Aboriginal Relations (AENV)

4.5.3 Stakeholder Advisory Group

A Stakeholder Advisory Group (SAG) will be formed early in the planning process to provide a targeted public consultation, as required in the *Water Act* for the development of a water management plan. The resulting Stakeholder Advisory Group (SAG) will be knowledgeable of identified sectors, residing in and using the Battle River.

It is anticipated that rather than being responsible to a specific sector, each member will bring different sets of knowledge of the watershed to the table. Collaborative learning and representation will be encouraged during the process. Membership in the SAG may include representatives from:

- Municipalities: rural
- Municipalities: urban
- Municipalities: small population
- First Nations
- Academic (Augustana University – Environmental Studies)
- Agriculture
- Industry
- Riparian health/Habitat
- Local watershed groups
- Landowner
- North Saskatchewan Watershed Alliance
- Recreational user
- Public health

Dialogue and collaborative learning will be promoted within the group to facilitate innovative and representative recommendations being provided for consideration during plan development.

It is envisioned that the SAG will develop into a Watershed Planning and Advisory Council (WPAC), as outlined in *Water for Life*.

4.5.4 Aboriginal Consultation

First Nations will be invited to participate in the Stakeholder Advisory Group. The provincial Aboriginal Policy Framework will be consulted during First Nations consultation and development of recommendations. Additional consultation with First Nations may be necessary.

4.5.5 Project Coordinator

A project coordinator will provide integration and coordination services for the planning process and be responsible to the Steering Committee and Chairperson. Central Region's Senior Planner in the Red Deer office will fulfill the Project Coordinator position. The Coordinator will be the main author of the draft plan, and ensure adherence to the Terms of Reference.

5.0 Process Timeline

The following is a proposed timeline, and will be adjusted as needed.

Task	2003	2004				2005				2006
Data Gathering/Assembly										
Steering Committee Formation										
Terms of Reference										
Stakeholder Group Assembly										
Data Review & Recommendations										
Draft Plan Development										
Public Review & Plan Completion										
WPAC Capacity Building										

GLOSSARY

Acronyms

AAFRD – Alberta Agriculture, Food and Rural Development

ACA – Alberta Conservation Association

AENV – Alberta Environment

DFO – Department of Fisheries and Oceans (federal)

EPEA – Environmental Protection and Enhancement Act

IN – Instream Needs

NSWA – North Saskatchewan Watershed Alliance

PFRA – Prairie Farm Rehabilitation Administration

SAG – Stakeholder Advisory Group

WRMM – Water Resource Management Model

WPAC – Watershed Planning and Advisory Council

Terms

ALLOCATION – When water is redirected for a use other than for domestic purposes, it is referred to as an allocation. Agricultural, industrial and municipal water users apply to Alberta Environment for a license to use a set allocation of water. This water license outlines the volume, rate and timing of a diversion of water.

APPROVAL – An approval provides authority for constructing works or for undertaking an activity within a water body. The approval includes conditions under which the activity can take place.

AQUATIC ECOSYSTEM – An aquatic area where living and non-living elements of the environment interact. These include rivers, lakes and wetlands, and the variety of plants and animals associated with them.

AQUIFER – An underground water-bearing formation that is capable of yielding water. Aquifers have specific rates of discharge and recharge. As a result, if groundwater is withdrawn faster than it can be recharged the underground aquifer cannot sustain itself.

CONSUMPTIVE USE – The balance of water taken from a source that is not entirely or directly returned to that source. For example, if water is taken from a lake to feed cattle, it is considered a consumptive use of water.

DIVERSION OF WATER - The impoundment, storage, consumption, taking or removal of water for any purpose. This does not include removing an ice jam, drainage, flood control, erosion control or channel realignment.

DRINKING WATER – Water that has been treated to provincial standards and is fit for human consumption.

FIRST-IN-TIME, FIRST-IN-RIGHT – The principle used to prioritize water rights in Alberta. This principle, established in 1894, means that water rights are prioritized according to how senior the license is, regardless of its use. The older the license, the higher the user is on the priority list.

GROUNDWATER – All water under the surface of the ground whether in liquid or solid state. It originates from rainfall or snowmelt that penetrates the layer of soil just below the surface. For groundwater to be a recoverable resource, it must exist in an aquifer. Groundwater can be found in practically every area of the province, but aquifer depths, yields and water quality vary.

HABITAT – The term used to describe the natural home of a living organism. The three components of wildlife habitat are food, shelter and water.

HYDROLOGIC CYCLE (WATER CYLCE) – The hydrologic cycle is the process by which water evaporates from oceans and other bodies of water, accumulates as water vapor in clouds, and returns to oceans and other bodies of water as rain and snow, or as run-off from this precipitation or as groundwater.

INSTREAM NEEDS – This is the scientifically determined amount of water, flow rate or water level that is required in a river or other body of water to sustain a healthy aquatic environment or to meet human needs such as recreation, navigation, waste assimilation, or aesthetics. An instream need is not necessarily the same as the natural flow.

MICRO-ORGANISMS – Also known as microbes, tiny living organisms that can be seen only with the aid of a microscope. Some micro-organisms can cause acute health problems when consumed in drinking water.

NATURAL FLOW – Natural flow is the flow in rivers that would have occurred in the absence of any man-made effects.

NON-CONSUMPTIVE USE – A use of water in which all of the water used is directly returned to the source from which it came. For example, water used in the production of hydroelectricity is a non-consumption water use.

NON-POINT SOURCE POLLUTION – Non-point source pollution is contamination that cannot be identified as originating from one site. This type of pollution comes from a larger area of land and is carried by run-off and groundwater.

OGRANIC CONTAMINATS – Carbon-based chemicals, such as solvents and pesticides, which can get into water through run-off from cropland or discharge from factories.

POINT SOURCE POLLUTION – This is pollution that originates from an identifiable cause or location, such as a sewage treatment plant or feedlot.

POTABLE WATER – Water that is fit for human consumption, but has not been treated.

RAW WATER – Water in its natural state, prior to any treatment for drinking.

RESERVOIR – A man-made lake that collects and stores water for future uses. During periods of low river flow, reservoirs can release additional flow if water is available.

RIPARIAN AREA – The area along streams, lakes and wetlands where water and land interact. These areas support plants and animals, and protect aquatic ecosystems by filtering out sediments and nutrients originating from upland areas.

RIVER BASIN – An area of land drained by a river and its associated streams or tributaries. Alberta's *Water Act* identifies seven major river basins with the province:

- Peace/Slave River Basin
- Athabasca River Basin
- North Saskatchewan River Basin
- South Saskatchewan River Basin
- Milk River Basin
- Beaver River Basin
- Hay River Basin

RIVER REACH – A group of river segments with similar biophysical characteristics. Most river reaches represent simple streams and rivers, while some river reaches represent the shorelines of wide rivers, lakes and coastlines.

RUN-OFF – This refers to water that moves over the surface of the ground. Run-off collects sediments and contaminants as it moves from higher elevations to lower elevations.

SURFACE WATER – Most Albertans get their water from surface water sources such as lakes and rivers. The run-off from rain and snow renews our surface water sources each year. If the demand for surface water is higher than the supply, there will not be enough available to balance the needs of Albertans, the economy and the environment.

WATER ALLOCATION TRANSFER – A water allocation transfer occurs after the holder of an existing water withdrawal license agrees to provide all or part of the amount they are allocated to another person or organization. Alberta Environment must approve any transfer of this kind. When this occurs, the allocation is separated from the original land, and a new license, with the seniority of the transferred allocation, is issued and attached to the new location. Under the *Water Act*, Alberta Environment can place conditions on the new license. Water allocation transfers can occur only if authorized under an approved water management plan, or by the Lieutenant Governor in Council.

WATER BODY – Any location where water flows or is present, whether or not the flow or the presence of water is continuous, intermittent or occurs only during a flood. This includes, but is not limited to, wetlands and aquifers.

WATER CONSERVATION – Conservations is the planned protection, improvement and wise use of natural resources. It includes controlling, protecting and managing water.

WATER CONSERVATIN OBJECTIVE – As outlined in Alberta's *Water Act*, a water conservation objective is the amount and quality of water necessary for the protection of a natural water body or its aquatic environment. It may also include water necessary to maintain a rate of flow or water level requirements.

WATER LICENCE – A water licence provides the authority for diverting and using surface water or groundwater. The licence identifies the water source; the location of the diversion site; an amount of water to be diverted and used from that source; the priority of the "water right" established by the licence; and the condition under which the diversion and use must take place.

WATER MANAGEMENT PLAN – *Alberta's Framework for Water Management Planning* outlines the process for water management planning and the components required for water management plans in the province. It applies to all water bodies, including streams, rivers, lakes, aquifers and wetlands.

WATER WELL – An opening in the ground, whether drilled or altered from its natural state, that is used for the production of groundwater, obtaining data on groundwater, or recharging an underground formation from which groundwater can be recovered. By definition in the provincial *Water Act*, a water well also includes any related equipment, buildings, and structures.

WATERSHED – A watershed is the area of land that catches precipitation and drains into a larger body of water such as a marsh, stream, river or lake.

WATERSHED APPROACH – A watershed approach focuses efforts within watersheds, taking into consideration both ground and surface water flow. This approach recognizes and plans for the interaction of land, waters, plants, animals and people. Focusing efforts at the watershed level gives the local watershed community a comprehensive understanding of local management needs, and encourages locally led management decisions.

WETLAND – Wetlands are formed in depressions or low areas where the ground is saturated with water or is flooded. Alberta has five types of wetlands: bogs, fens, swamps, marshes and ponds.

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